

Honors Biology Course Overview

Mrs. Stone 2013-14

Unit	Topics	Key Vocabulary
Nature of Biology	Organization and central themes in Biology Characteristics of Life Tools: The Microscope and Measurement Scientific Method	Biotic, Abiotic, Organism Homeostasis Independent variable, Dependent variable Control
Biochemistry	Classification of Matter Properties of water Biological molecules: proteins, lipids, carbohydrates, and nucleic acids Enzymes	Atoms, molecules, compounds, elements, mixtures Organic vs. Inorganic Macromolecules Hydrogen Bonding Capillary action, Cohesion, Specific Heat Intermolecular force, Molecular Polarity Monomer, Polymer, ATP, DNA Catalyst, Activation Energy
Cell Structure and Function	Prokaryotes vs. Eukaryotes Organelles	Prokaryote vs. Eukaryote Protist Organelles: Cell Membrane, Cell wall Nucleus, Mitochondria, Chloroplast Golgi Apparatus Endoplasmic Reticulum Vesicles, Lysosomes, Centrioles
Cellular Energetics: Transport, Respiration, Photosynthesis	Maintenance of Homeostasis via trans membrane transport Photosynthesis Respiration	Homeostasis Active Vs Passive transport Diffusion, Facilitated diffusion, Osmosis Pumps, Endocytosis, Exocytosis, Equilibrium Physiology, Hypo, Iso, Hypertonic Aerobic vs. anaerobic
Cellular Reproduction	Mitosis Meiosis	Somatic, Gamete, Haploid, Diploid Cell cycle: Interphase, Prophase, Metaphase, Anaphase, Telophase, Cytokinesis Gene, Chromosome
DNA, RNA, and Proteins	DNA Replication DNA vs. RNA Protein Synthesis Bio-technology	Replication, transcription, translation DNA, mRNA, tRNA, Ribosome, Nucleotide Helix Selective breeding, Gene therapy Genetic engineering, Cloning DNA fingerprinting, Biomaterials, 3D printing
Heredity and Biotechnology	Mendel and inheritance Patterns of Inheritance Mutations and Genetic variation	Segregation, Independent Assortment Homozygous, Heterozygous Dominant and recessive Phenotype, Genotype Crossing Over, Nondisjunction Duplication, Translocation Deletion, Insertion, Inversion Nonsense, Frame shift, Mutation
Evolution	Theories of Evolution Natural Selection Fossils Speciation	Evolutionism, Catastrophism, Uniformitarianism Decent, Modification Selection, Variation Differential Reproduction Stabilizing selection, Directional selection Disruptive selection, Sexual selection

Evolution Cont.		Fossil record, Dating: absolute, relative Transitional species Vestigial, Homologous, Genetic Equilibrium Morphological species, Biological species Mutation, Migration, Genetic drift Geographic and reproductive isolation
Ecology	Population and environment Interactions Abiotic and Biotic factors Watersheds	Natality and Mortality Immigration and Emigration, Migration Diurnal and nocturnal, Estivation Abiotic and biotic Ecosystem, Succession, Biome, Niche, Habitat Watershed, Micro invertebrate, biodiversity, erosion, runoff
Viruses	Viral Replication Impact of Viruses on Medicine	Lytic cycle, lysogenic cycle Vaccine
Taxonomy	Biological Kingdoms Classification of Organisms Characteristics of organisms	Taxonomy, binomial nomenclature, anatomical characteristics Dichotomous key